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PACIFIC AND YUKON REGION

BENTHIC SEDIMENT CHEMISTRY
BRITISH COLUMBIA OCEAN DUMPSITES
OCTOBER 1987

REGIONAL DATA REPORT DR-90-06

by

D.E. Brothers

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1.0 INTRODUCTION

In October 1988, a benthic sediment chemistry survey was conducted at the Squamish Terminal, Watts Point, Thornbrough Channel, Gabriola and Newcombe Channel dumpsites using the survey vessel CSS Vector. The data collected is part of a routine monitoring and assessment program of ocean dumpsite locations by Conservation and Protection. At each major ocean dumpsite, a monitoring grid has been established to facilitate successive surveys (Figures 1-5)

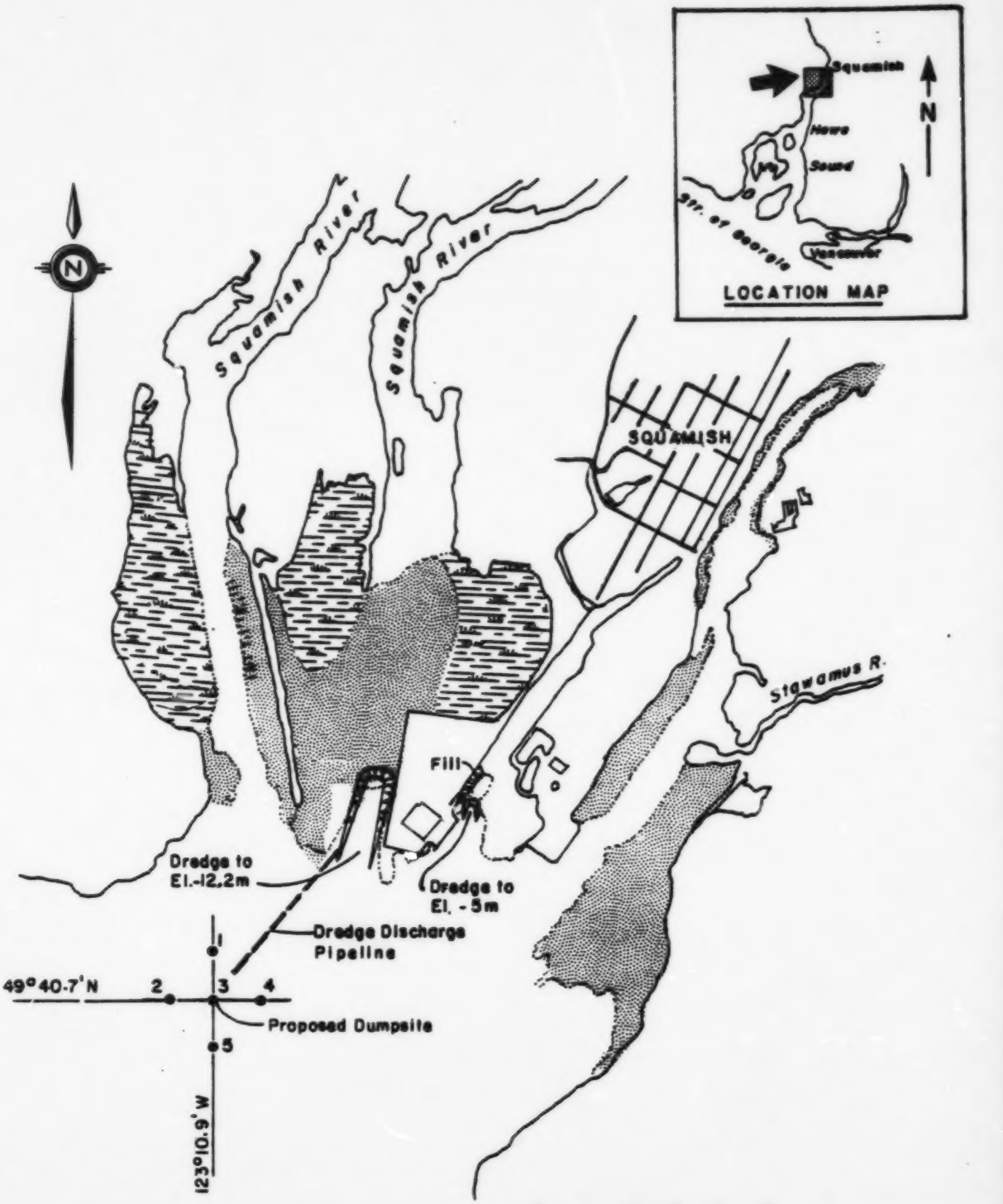

FIGURE 1 SQUAMISH TERMINALS - BENTHIC SEDIMENT SAMPLING STATIONS

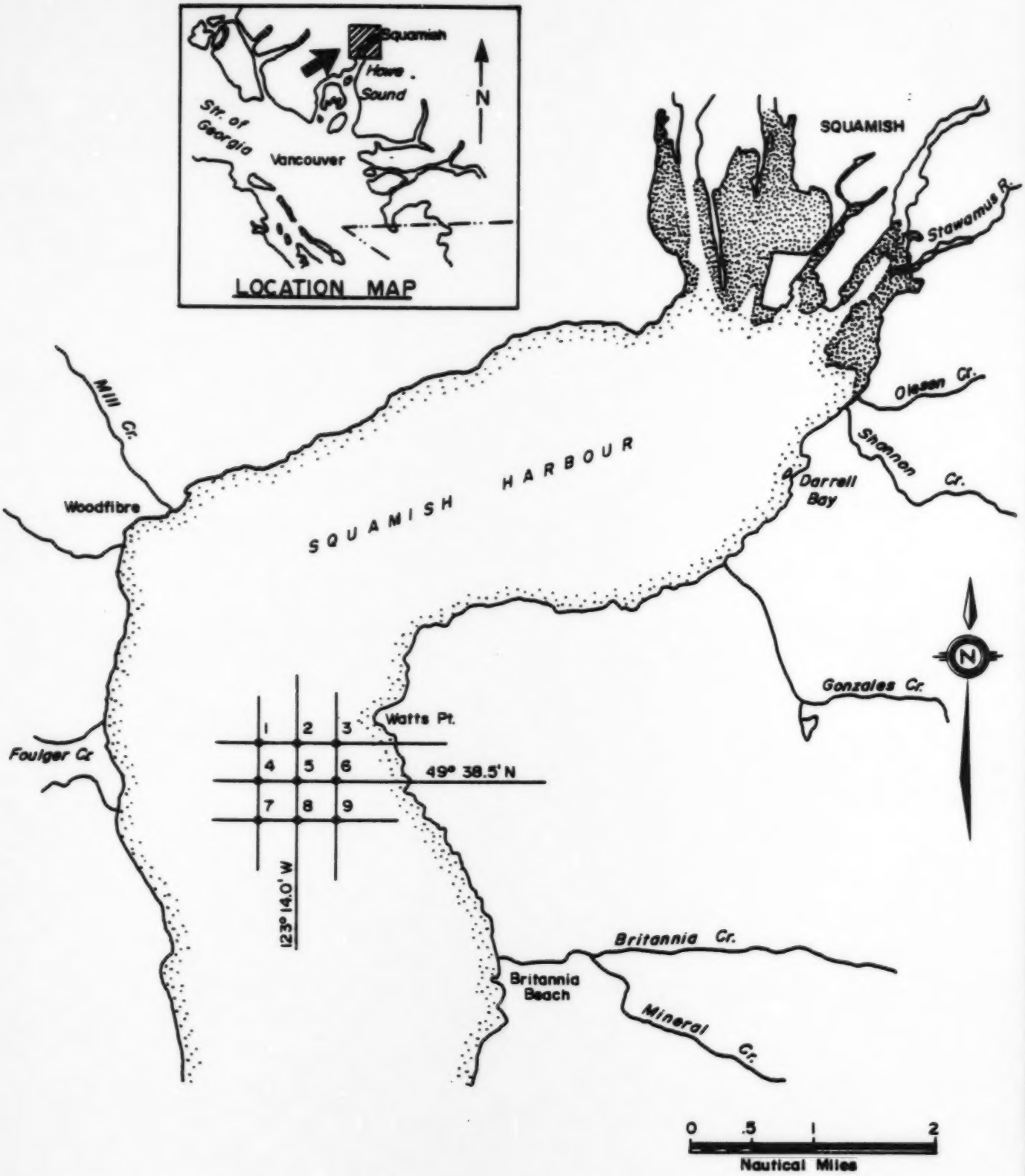

FIGURE 2 WATTS POINT OCEAN DUMPSITE - BENTHIC SEDIMENT SAMPLING STATIONS

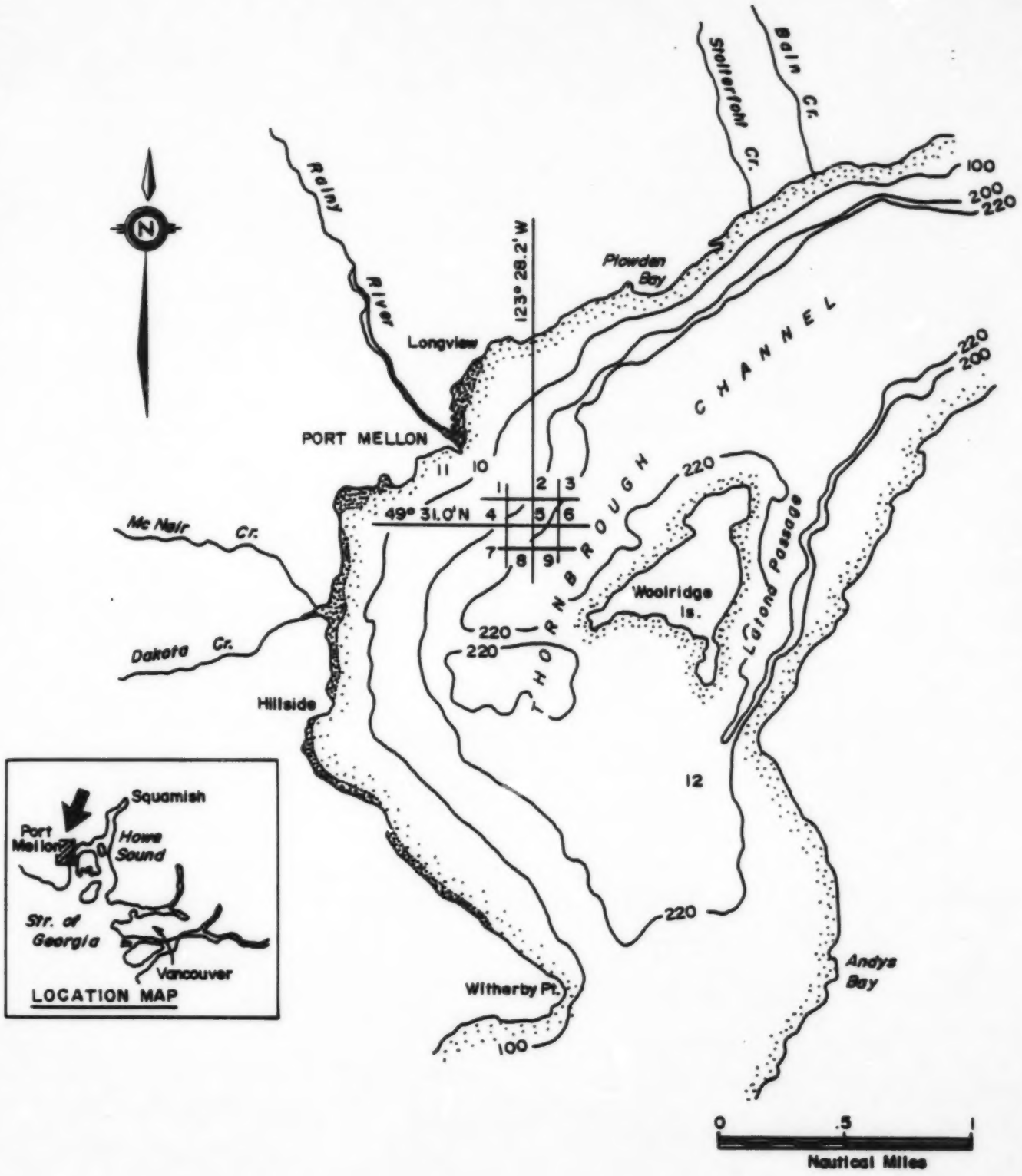

FIGURE 3 THORNBROUGH CHANNEL OCEAN DUMPSITE - BENTHIC SEDIMENT SAMPLING STATIONS

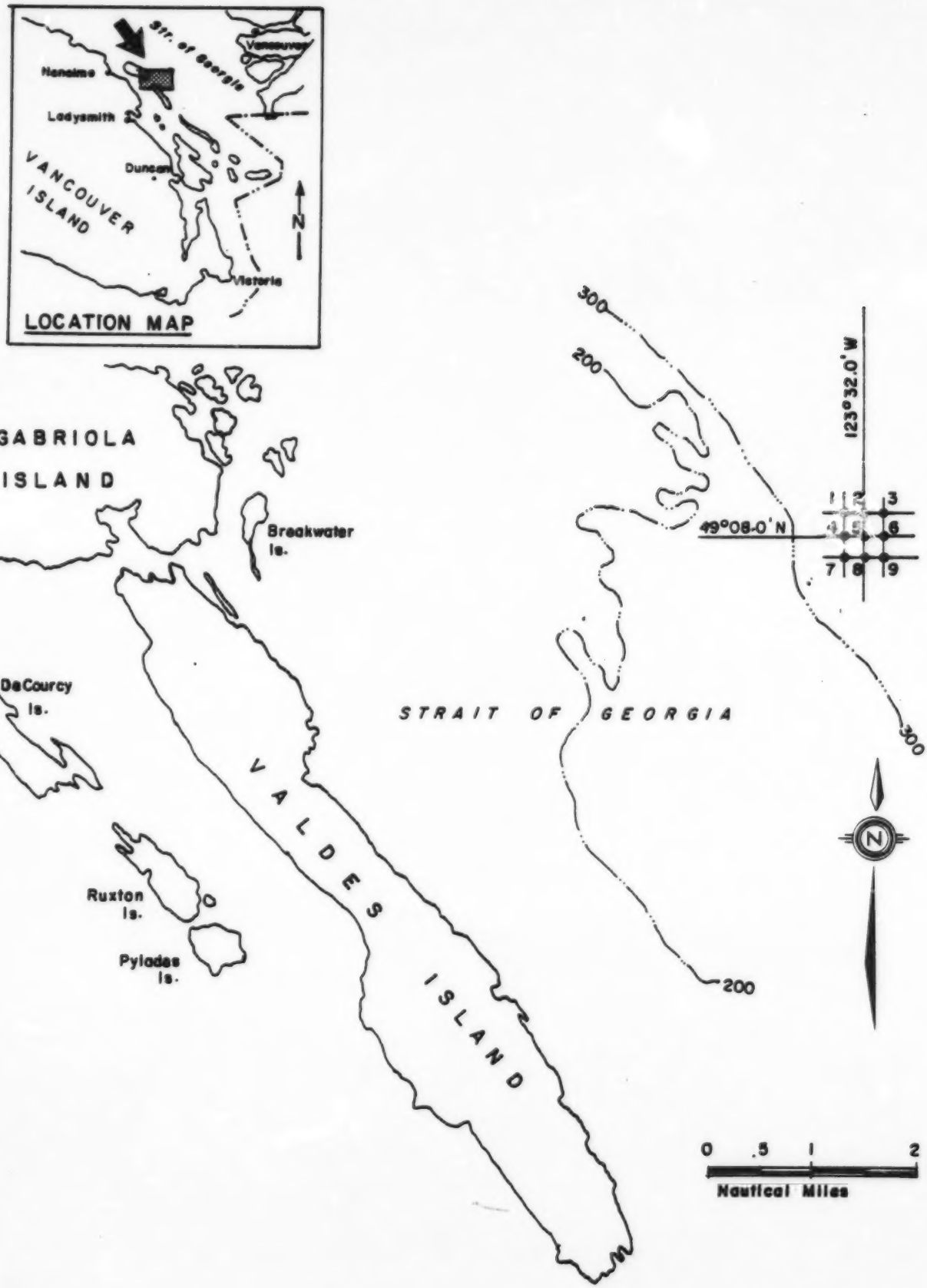

FIGURE 4 GABRIOLA OCEAN DUMPSITE - BENTHIC SEDIMENT SAMPLING STATIONS

FIGURE 5 NEWCOMBE CHANNEL OCEAN DUMPSITE - BENTHIC SEDIMENT SAMPLING STATIONS

2.0 MATERIAL AND METHODS

Grab samples were taken using a Smith McIntyre sampler. One grab was taken at each station. Upon retrieval, water was siphoned from the surface sediment, if necessary. Three samples, 0 to 5 cm sediment depth, were taken from each grab.

Cadmium, mercury, lead, copper and zinc concentrations are presented in the tables, along with the mean and standard deviation.

All analyses were conducted by the Conservation and Protection Laboratories in West Vancouver. The raw data represents a single analysis for each sample after drying and homogenizing. Cu, Pb, and Zn were analysed using Inductively Coupled Argon Plasma Atomic Emission (ICAP-AE), Cd using Graphite Furnace Atomic Absorption (GFAA), and Hg using flameless AA.

The accuracy data for each lab submission are given in Appendix I. The raw data printout, giving the complete ICAP semi-quantitative scan and particle size data, are included in Appendix II, and can be located by matching the sample and lab submission numbers given on the data tables. Precision data for the lab submissions are provided on the data tables, and represent analyses of separate aliquots of dryed, homogenized sediments from the sample bag.

TABLE 1

SQUAMISH TERMINALS - STATIONS 1-5

DATE SAMPLED: OCTOBER 5, 1987.

METALS LAB #5592G:(CANTEST) 72,79,86
METALS LAB #890133
PARTICLE SIZE LAB #880266

STN	DEPTH (m)	SAMPLE (PARTICLE SIZE)	SEDIMENT DEPTH (cm)	UG/G DRY WEIGHT Hg	Cd	Pb	Cu	Zn
1	70	73 (26)*	0-5	.020	.08	9	40.6	65.9
		74	0-5	.023	.10	9	40.1	67.6
		75	0-5	.027	.09	ND(8)	40.0	63.5
			MEAN	.023	.09		40.2	65.7
			STD DEV	.004	.01		.3	2.1
2	89	79 (28)*+	0-5	.021	.08	ND(2)	--	--
		80	0-5	.010	.08	ND(8)	33.0	51.7
		85	0-5	.020	.07	10	37.8	57.5
			MEAN	.017	.08		35.4	54.6
			STD DEV	.006	.01		3.4	4.1
3	80	66 (25)*	0-5	.010	.09	ND(8)	37.0	59.3
		71	0-5	.000	.00	10	10.0	10.0
		72	0-5	.012	.05	ND(2)	--	--
			MEAN	.003	.03	10	19.0	26.4
			STD DEV	.006	.05	0	15.6	28.5
4	64	86 (29)*+	0-5	.019	.05	2		
		87	0-5	.020	.07	10	37.1	62.3
		88	0-5	.024	.52	ND(8)	38.3	64.4
			MEAN	.021	.21		37.7	63.4
			STD DEV	.003	.27		.8	1.5
5	94	76 (27)*	0-5	.010	.09	ND(8)	37.4	59.2
		77	0-5	.010	.08	ND(8)	38.2	60.9
		78	0-5	.020	.10	10	37.0	61.6
			MEAN	.013	.09		37.5	60.6
			STD DEV	.006	.01		.6	1.2

NOTE: numbers in brackets are limits of detection. (cf:SCPSQUAM)
ND - not detected
* denotes particle size data in appendix (use # in brackets).

SQUAMISH TERMINALS - STATIONS 1-5 (cont'd)

DATE SAMPLED: OCTOBER 5, 1987.

METALS LAB #5592G:(CANTEST) 72,79,86
METALS LAB #890133
PARTICLE SIZE:LAB #880266

PRECISION DATA

SAMPLE	Hg	Cd	Pb	Cu	Zn
80	.010	.08	ND(8)	33.0	51.7
81	.010	.09	8	32.6	54.7
82	.010	.08	ND(8)	34.1	53.1
83	.010	.08	ND(8)	36.4	55.5
84	.010	.08	ND(8)	34.0	56.4
MEAN	.010	.08		34.0	54.3
STD DEV	.000	.00		1.5	1.9
66	.010	.09	ND(8)	37.0	59.3
67	.010	.10	ND(8)	37.2	62.0
68	.010	.10	10	36.5	59.8
69	.010	.08	10	37.5	62.4
70	.010	.10	10	37.4	61.0
MEAN	.010	.09		37.1	60.9
STD DEV	.000	.01		.4	1.3

NOTE: numbers in brackets are limits of detection. (cf: SCPSQUAM)
ND - not detected
* denotes particle size data in appendix (use # in brackets).

TABLE 2

WATTS POINT DUMPSITE - STATION 1-9

DATE SAMPLED: OCTOBER 6, 1987. METALS LAB #870830
PARTICLE SIZE LAB #870831

STN	DEPTH (m)	SAMPLE (PARTICLE SIZE)	SEDIMENT DEPTH (cm)	UG/G DRY WEIGHT Hg	Cd	Pb	Cu	Zn
1	240	10 (6)*	0-5	.051	.20	ND(8)	74.7	78.0
		15	0-5	.028	.19	ND(8)	70.7	86.1
		16	0-5	.130	.31	ND(8)	101.0	93.3
			MEAN	.070	.23		82.1	85.8
			STD DEV	.054	.07		16.5	7.7
2	239	17 (7)*	0-5	.232	.38	ND(8)	83.6	77.6
		18	0-5	.199	.30	ND(8)	80.3	76.2
		19	0-5	.195	.30	ND(8)	79.9	77.4
			MEAN	.209	.33		81.3	77.1
			STD DEV	.020	.05		2.0	.8
3	235	20 (8)*	0-5	.284	.33	ND(8)	101.0	90.0
		21	0-5	.262	.30	ND(8)	100.0	89.4
		22	0-5	.213	.28	ND(8)	93.7	85.2
			MEAN	.253	.30		98.2	88.2
			STD DEV	.036	.03		4.0	2.6
4	242	7 (5)*	0-5	.099	.10	ND(8)	98.7	95.1
		8	0-5	.110	.07	ND(8)	80.7	99.6
		9	0-5	.051	.10	ND(8)	73.2	86.9
			MEAN	.087	.09		84.2	93.9
			STD DEV	.031	.02		13.1	6.4
5	248	1 (1)*	0-5	.160	.22	ND(8)	81.2	82.5
		2	0-5	.071	.09	ND(8)	51.8	60.0
		3	0-5	.140	.19	ND(8)	64.6	68.6
			MEAN	.124	.17		65.9	70.4
			STD DEV	.047	.07		14.7	11.4
		4	30-40	.326	1.3	27.0	361.0	359.0
		5	60-70	.020	1.4	58.0	596.0	379.0
		6	90-100	.018	2.7	110.0	748.0	490.0
			MEAN	.121	1.8	65.0	568.3	409.3
			STD DEV	.177	.8	41.9	195.0	70.6
6	250	23 (9)*	0-5	.062	.47	ND(8)	98.8	90.6
		24	0-5	.071	.36	ND(8)	107.0	98.1
		29	0-5	.070	.20	ND(8)	95.4	69.8
			MEAN	.068	.34		100.4	86.2
			STD DEV	.005	.14		6.0	14.7

NOTE: numbers in brackets are limits of detection. (cf:SCPWATT9)
ND - not detected
* denotes particle size data in appendix (use # in brackets).

WATTS POINT DUMPSITE - STATIONS 1-9 (cont'd)

DATE SAMPLED: OCTOBER 6, 1987. METALS LAB #870830
PARTICLE SIZE LAB #870831

STN	DEPTH (m)	SAMPLE (PARTICLE SIZE)	SEDIMENT DEPTH (cm)	UG/G DRY WEIGHT Hg	Cd	Pb	Cu	Zn
7	252	36 (12)*	0-5	.130	.21	ND(8)	91.6	92.5
		37	0-5	.160	.21	ND(8)	92.3	96.2
		38	0-5	.140	.20	ND(8)	124.0	74.1
			MEAN	.143	.21		102.6	87.6
			STD DEV	.015	.01		18.5	11.8
8	247	33 (11)*	0-5	.040	.20	ND(8)	73.1	85.6
		34	0-5	.032	.19	ND(8)	63.2	82.3
		35	0-5	.057	.24	ND(8)	80.8	85.0
			MEAN	.043	.21		72.4	84.3
			STD DEV	.013	.03		8.8	1.8
9	252	30 (10)*	0-5	.066	.20	ND(8)	79.6	88.7
		31	0-5	.120	.20	ND(8)	80.9	88.5
		32	0-5	.083	.20	ND(8)	76.1	84.0
			MEAN	.090	.20		78.9	87.1
			STD DEV	.028	.00		2.5	2.7

PRECISION DATA

SAMPLE	Hg	Cd	Pb	Cu	Zn
10	.051	.20	ND(8)	74.7	78.0
11	.081	.21	ND(8)	84.2	86.2
12	.047	.17	ND(8)	79.6	83.1
13	.052	.19	ND(8)	80.1	81.9
14	.050	.20	ND(8)	79.5	84.5
MEAN	.056	.19		79.6	82.7
STD DEV	.014	.02		3.4	3.1
24	.071	.36	ND(8)	107.0	98.1
25	.074	.36	ND(8)	104.0	95.6
26	.056	.26	ND(8)	95.4	91.7
27	.060	.29	ND(8)	97.6	91.5
28	.035	.18	ND(8)	72.9	68.9
MEAN	.059	.29		95.4	89.2
STD DEV	.015	.08		13.4	11.7
38	.140	.20	ND(8)	124.0	74.1
39	.185	.29	ND(8)	139.0	92.6
40	.150	.19	ND(8)	124.0	80.3
41	.120	.10	ND(8)	110.0	75.0
42	.167	.10	ND(8)	171.0	87.5
MEAN	.152	.18		133.6	81.9
STD DEV	.025	.08		23.3	8.0

NOTE: numbers in brackets are limits of detection. (cf:SCPWATT9)
ND - not detected
* denotes vertical grab data in composite (see # in brackets)

TABLE 3

THORNBROUGH CHANNEL DUMPSITE - STATIONS 1-12

DATE SAMPLED: OCTOBER 6, 1987. METALS LAB #870830
PARTICLE SIZE LAB #870831

STN	DEPTH (m)	SAMPLE	SEDIMENT DEPTH (cm)	UG/G DRY WEIGHT Hg	Cd	Pb	Cu	Zn
1	214	46 (16)*	0-5	.120	.57	ND(8)	71.9	71.4
		47	0-5	.095	.47	10	63.4	73.6
		48	0-5	.120	.77	9	75.1	86.7
			MEAN	.112	.60		70.1	77.2
			STD DEV	.014	.15		6.0	8.3
2	227	49 (17)*	0-5	.120	.33	ND(8)	42.4	60.5
		50	0-5	.083	.27	ND(8)	36.1	58.2
		51	0-5	.074	.31	9	40.7	60.5
			MEAN	.092	.30		39.7	59.7
			STD DEV	.024	.03		3.3	1.3
3	234	52 (18)*	0-5	.044	.20	ND(8)	28.8	50.6
		57	0-5	.028	.08	ND(8)	19.5	43.5
		58	0-5	.033	.34	ND(8)	34.7	78.7
			MEAN	.035	.21		27.7	57.6
			STD DEV	.008	.13		7.7	18.6
4	216	59 (19)*	0-5	.176	.82	19	70.2	98.0
		60	0-5	.194	.80	19	68.6	93.1
		61	0-5	.197	.82	21	63.0	99.1
			MEAN	.189	.81	20	67.3	96.7
			STD DEV	.011	.01	1	3.8	3.2
5	229	62 (20)*	0-5	.160	.51	10	66.2	90.2
		63	0-5	.182	.45	ND(8)	60.4	83.7
		64	0-5	.166	.40	10	53.3	77.3
			MEAN	.169	.45		60.0	83.7
			STD DEV	.011	.06		6.5	6.5
		65 (21)*	30-40	.094	.56	ND(8)	48.4	86.4
		66 (22)*	60-70	.045	.52	10	44.8	83.7
		71 (23)*	90-100	.039	.33	ND(8)	35.2	75.1
		72 (23)*	120-130	.032	.31	ND(8)	29.9	59.7
6	232	73 (25)*	0-5	.110	.10	ND(8)	38.5	60.9
		74	0-5	.097	.10	ND(8)	32.3	52.1
		75	0-5	.110	.10	ND(8)	41.0	61.4
			MEAN	.106	.10		37.3	58.1
			STD DEV	.008	.00		4.5	5.2

NOTE: numbers in brackets are limits of detection. (cf:SCPTH012)
ND - not detected
* denotes particle size data in appendix (use # in brackets).

THORNBROUGH CHANNEL DUMPSITE - STATIONS 1-12 (cont'd)

DATE SAMPLED: OCTOBER 6, 1987.

METALS LAB #870830
PARTICLE SIZE LAB #870831

STN	DEPTH (m)	SAMPLE	SEDIMENT DEPTH (cm)	UG/G DRY WEIGHT Hg	Cd	Pb	Cu	Zn
7	231	76 (26)*	0-5	.349	.48	17	104.0	133.0
		77	0-5	.319	.64	10	103.0	134.0
		78	0-5	.310	.56	22	90.4	127.0
			MEAN	.326	.56	16	99.1	131.3
			STD DEV	.020	.08	6	7.6	3.8
8	233	79 (27)*	0-5	.217	.54	10	69.2	102.0
		80	0-5	.222	.41	10	68.1	101.0
		85	0-5	.357	.54	20	81.3	121.0
			MEAN	.265	.50	13	72.9	108.0
			STD DEV	.079	.08	6	7.3	11.3
9	233	86 (28)*	0-5	.384	.56	21	98.9	143.0
		87	0-5	.391	.65	21	98.0	140.0
		88	0-5	.388	.50	22	100.0	138.0
			MEAN	.388	.57	21	99.0	140.3
			STD DEV	.004	.08	1	1.0	2.5
10	170	89 (30)*	0-5	.169	.63	10	53.0	64.2
		90	0-5	.160	.54	10	48.3	66.5
		91	0-5	.140	.77	10	52.8	75.1
			MEAN	.156	.65	10	51.4	68.6
			STD DEV	.015	.12	0	2.7	5.7
11	50	92 (30)*	0-5	.054	.18	ND(8)	50.9	50.8
		93	0-5	.045	.10	ND(8)	39.1	52.7
		94	0-5	.055	.28	ND(9)	27.8	54.4
			MEAN	.051	.19		39.3	52.6
			STD DEV	.006	.09		11.6	1.8
12	221	99 (31)*	0-5	.448	.60	27	124.0	164.0
		100	0-5	.500	.63	29	122.0	170.0
		101	0-5	.449	.60	22	127.0	172.0
			MEAN	.466	.61	26	124.3	168.7
			STD DEV	.030	.02	4	2.5	4.2

NOTE: numbers in brackets are limits of detection. (cf:SCPTH012)
ND - not detected
* denotes particle size data in appendix (use # in brackets).

THORNBROUGH CHANNEL DUMPSITE - STATIONS 1-12 (cont'd)

DATE SAMPLED: OCTOBER 6, 1987.

METALS (LAB #870830)
PARTICLE SIZE: (LAB #870831)

PRECISION DATA

SAMPLE	Hg	Cd	Pb	Cu	Zn
52	.044	.20	ND(8)	28.8	50.6
53	.072	.22	ND(8)	26.6	47.4
54	.048	.10	ND(8)	16.0	128.0
55	.120	.10	ND(8)	26.0	47.3
56	.033	.10	ND(8)	22.0	44.7
MEAN	.063	.14		23.9	63.6
STD DEV	.035	.06		5.0	36.1
66	.045	.52	10	44.8	83.7
67	.042	.50	ND(8)	48.2	86.4
68	.047	.56	ND(8)	47.3	85.4
69	.045	.48	ND(8)	44.3	86.0
70	.051	.45	ND(8)	41.3	84.6
MEAN	.046	.50		45.2	85.2
STD DEV	.003	.04		2.7	1.1
80	.222	.41	10	68.1	101.0
81	.238	.44	21	71.0	103.0
82	.224	.40	20	67.1	102.0
83	.264	.51	10	73.1	109.0
84	.269	.45	10	73.3	108.0
MEAN	.243	.44	14	70.5	104.6
STD DEV	.022	.04	6	2.8	3.6
94	.055	.28	ND(8)	27.8	54.4
95	.047	.28	9	30.2	46.0
96	.264	.35	ND(8)	31.1	52.6
97	.086	.37	ND(8)	39.2	47.5
98	.051	.32	ND(8)	30.6	84.7
MEAN	.101	.32		31.8	57.0
STD DEV	.093	.04		4.3	15.8

NOTE: numbers in brackets are limits of detection. (cf:SCPTH012)
ND - not detected

TABLE 4

GABRIOLA DUMPSITE - STATIONS 1-9

DATE SAMPLED: OCTOBER 5, 1987.

METALS LAB # 890133
PARTICLE SIZE LAB # 880266

STN	DEPTH (m)	SAMPLE (PARTICLE SIZE)	SEDIMENT DEPTH (cm)	UG/G DRY WEIGHT Hg	Cd	Pb	Cu	Zn
1	378	10 (6)*	0-5	.095	.26	28	39.9	113.0
		15	0-5	.091	.27	29	41.1	119.0
		16	0-5	.092	.22	33	41.0	116.0
			MEAN	.093	.25	30	40.7	116.0
			STD DEV	.002	.03	3	.7	3.0
2	367	17 (7)*	0-5	.110	.23	28	40.1	112.0
		18	0-5	.120	.28	28	41.5	117.0
		19	0-5	.091	.29	29	40.0	118.0
			MEAN	.107	.27	28	40.5	115.7
			STD DEV	.015	.03	1	.8	3.2
3	368	20 (8)*	0-5	.418	.25	27	40.9	113.0
		21	0-5	.091	.27	26	40.3	110.0
		22	0-5	.096	.26	30	40.6	115.0
			MEAN	.202	.26	28	40.6	112.7
			STD DEV	.187	.01	2	.3	2.5
4	380	7 (5)*	0-5	.100	.25	26	42.6	126.0
		8	0-5	.096	.25	25	42.5	116.0
		9	0-5	.100	.28	29	41.8	119.0
			MEAN	.099	.26	27	42.3	120.3
			STD DEV	.002	.02	2	.4	5.1
5	376	1 (1)*	0-5	.110	.30	27	40.5	112.0
		2	0-5	.110	.34	27	40.2	121.0
		3	0-5	.100	.30	29	41.4	115.0
			MEAN	.107	.31	28	40.7	116.0
			STD DEV	.006	.02	1	.6	4.6
		4 (2)*	30-40	.100	.25	23	41.7	114.0
		5 (3)*	60-70	.096	.27	22	40.1	117.0
		6 (4)*	90-100	.078	.31	17	35.6	98.7
6	369	23 (9)*	0-5	.110	.30	29	41.1	116.0
		24	0-5	.092	.24	29	39.6	113.0
		29	0-5	.099	.27	28	38.7	109.0
			MEAN	.096	.27	29	39.8	112.7
			STD DEV	.005	.03	1	1.2	3.5

NOTE: numbers in brackets are limits of detection. (cf:SCPGABRI)

* denotes particle size data in appendix (use # in brackets).

GABRIOLA DUMPSITE - STATIONS 1-9 (cont'd)

DATE SAMPLED: OCTOBER 5, 1987.

METALS LAB # 890133
PARTICLE SIZE LAB # 880266

STN	DEPTH (m)	SAMPLE (PARTICLE SIZE)	SEDIMENT DEPTH (cm)	UG/G DRY WEIGHT Hg	Cd	Pb	Cu	Zn
7	395	36 (12)*	0-5	.093	.29	27	39.7	109.0
		37	0-5	.110	.27	30	39.8	109.0
		38	0-5	.110	.31	27	41.4	109.0
			MEAN	.104	.29	28	40.3	109.0
			STD DEV	.010	.02	2	1.0	.0
8	378	33 (11)*	0-5	.090	.30	29	40.9	114.0
		34	0-5	.110	.36	29	42.3	125.0
		35	0-5	.098	.30	29	40.6	115.0
			MEAN	.099	.32	29	41.3	118.0
			STD DEV	.010	.03	0	.9	6.1
9	369	30 (10)*	0-5	.100	.32	28	38.6	117.0
		31	0-5	.094	.25	26	38.3	105.0
		32	0-5	.090	.26	28	39.8	112.0
			MEAN	.095	.28	27	38.9	111.3
			STD DEV	.005	.04	1	.8	6.0

PRECISION DATA

SAMPLE	Hg	Cd	Pb	Cu	Zn
10	.095	.26	28	39.9	113.0
11	.090	.26	27	40.2	111.0
12	.092	.24	31	42.3	128.0
13	.110	.26	34	40.5	120.0
14	.095	.27	30	41.1	123.0
MEAN	.096	.26	30	40.8	119.0
STD DEV	.008	.01	3	.9	7.0
24	.092	.24	29	39.6	113.0
25	.100	.27	29	39.5	112.0
26	.097	.35	28	40.5	116.0
27	.100	.30	30	39.3	112.0
28	.092	.27	26	40.0	113.0
MEAN	.096	.29	28	39.8	113.2
STD DEV	.004	.04	2	.5	1.6
38	.110	.31	27	41.4	109.0
39	.100	.30	25	39.5	108.0
40	.100	.27	29	40.6	114.0
41	.110	.28	32	40.8	112.0
42	.100	.28	29	41.7	117.0
MEAN	.104	.29	28	40.8	112.0
STD DEV	.005	.02	3	.9	3.7

NOTE: numbers in brackets are limits of detection. (cf:SCPGABRI)

* denotes particle size data in appendix (use # in brackets).

TABLE 5

NEWCOMBE CHANNEL DUMP SITE - STATIONS 1-9

DATE SAMPLED: OCTOBER 8, 1987.

METALS LAB #890131
PARTICLE SIZE LAB #880267

STN	DEPTH (m)	SAMPLE (PARTICLE SIZE)	SEDIMENT DEPTH (cm)	UG/G DRY WEIGHT Hg	Cd	Pb	Cu	Zn
1	53	1 (23)*	0-5	.047	.74	ND(8)	17.0	40.8
		2	0-5	.047	.88	ND(8)	17.6	45.5
		3	0-5	.066	.79	ND(8)	17.8	44.3
			MEAN	.053	.80		17.5	43.5
			STD DEV	.011	.07		.4	2.4
2	55	24 (32)*	0-5	.059	.75	ND(8)	17.7	44.3
		29	0-5	.054	.70	ND(8)	18.6	47.8
		30	0-5	.055	.86	ND(8)	19.5	49.9
			MEAN	.056	.77		18.6	47.3
			STD DEV	.003	.08		.9	2.8
3	55	21 (31)*	0-5	.057	.66	ND(8)	16.7	52.8
		22	0-5	.043	.61	ND(8)	15.0	38.6
		23	0-5	.050	.87	ND(8)	19.1	48.3
			MEAN	.050	.71		16.9	46.6
			STD DEV	.007	.14		2.1	7.3
4	59	31 (33)*	0-5	.097	.98	ND(8)	34.7	73.0
		32	0-5	.092	.82	ND(8)	32.9	68.1
		33	0-5	.099	.81	ND(8)	32.8	67.7
			MEAN	.096	.87		33.5	69.6
			STD DEV	.004	.10		1.1	3.0
5	60	4 (24)*	0-5	.074	1.10	ND(8)	27.7	62.2
		5	0-5	.065	1.10	ND(8)	27.3	64.0
		6	0-5	.050	.90	ND(8)	25.2	60.3
			MEAN	.063	1.03		26.7	62.4
			STD DEV	.012	.12		1.3	1.6
		7 (25)*	10-20	.058	1.40	ND(8)	27.3	69.4
		8 (26)*	30-40	.061	1.40	ND(8)	25.7	60.8
		9 (27)*	60-70	.045	1.40	ND(8)	28.8	66.9
		10 (28)*	90-100	.077	1.40	ND(8)	27.9	66.1
6	61	18 (30)*	0-5	.059	1.00	ND(8)	21.9	55.6
		19	0-5	.052	.84	ND(8)	20.3	51.0
		20	0-5	.060	.87	ND(8)	20.5	55.1
			MEAN	.057	.90		20.9	53.9
			STD DEV	.004	.09		.9	2.5

NOTE: numbers in brackets are limits of detection. (cf:SCPNE1-9)
ND - not detected
* denotes particle size data in appendix (use # in brackets).

NEWCOMBE CHANNEL DUMP SITE - STATION 1-9 (cont'd)

DATE SAMPLED: OCTOBER 8, 1987.

METALS LAB #890131
PARTICLE SIZE LAB #880267

STN	DEPTH (m)	SAMPLE (PARTICLE SIZE)	SEDIMENT DEPTH (cm)	UG/G DRY WEIGHT Hg	Cd	Pb	Cu	Zn
7	54	34 (34)*	0-5	.031	.45	ND(8)	11.0	29.0
		35	0-5	.023	.47	ND(8)	9.7	27.4
		36	0-5	.030	.42	ND(8)	10.0	25.6
			MEAN	.028	.45		10.2	27.3
			STD DEV	.004	.03		.7	1.7
8	62	37 (35)*	0-5	.048	.61	ND(8)	16.7	42.2
		38	0-5	.052	.66	ND(8)	16.0	55.4
		43	0-5	.064	.62	ND(8)	17.9	42.6
			MEAN	.055	.63		16.9	46.7
			STD DEV	.008	.03		1.0	7.5
9	65	15 (29)*	0-5	.090	1.30	ND(8)	33.9	79.8
		16	0-5	.072	1.10	ND(8)	31.6	78.2
		17	0-5	.083	1.30	ND(8)	32.1	82.5
			MEAN	.082	1.23		32.5	80.2
			STD DEV	.009	.12		1.2	2.2

PRECISION DATA

SAMPLE	Hg	Cd	Pb	Cu	Zn
10	.077	1.40	ND(8)	27.9	66.1
11	.044	1.50	ND(8)	26.9	62.6
12	.048	1.40	ND(8)	28.2	70.5
13	.049	1.40	ND(8)	27.6	67.6
14	.047	1.40	ND(8)	27.1	65.1
MEAN	.053	1.42		27.5	66.4
STD DEV	.014	.04		.5	2.9
24	.059	.75	ND(8)	17.7	44.3
25	.051	.71	ND(8)	18.0	45.0
26	.052	.77	ND(8)	17.7	44.1
27	.054	.68	ND(8)	17.7	45.5
28	.051	.85	ND(8)	18.1	47.2
MEAN	.053	.75		17.8	45.2
STD DEV	.003	.06		.2	1.2
38	.052	.66	ND(8)	16.0	55.4
39	.059	.74	ND(8)	16.0	89.1
40	.049	.54	ND(8)	15.0	37.0
41	.054	.61	ND(8)	16.0	42.1
42	.051	.60	ND(8)	16.0	42.5
MEAN	.053	.63		15.8	53.2
STD DEV	.004	.07		.4	21.2

NOTE: numbers in brackets are limits of detection. (cf:SCPNE1-9)
ND - not detected
* denotes particle size data in appendix (use # in brackets).

APPENDIX I

ACCURACY DATA

ACCURACY DATA

LAB #890131

	Hg	Cd	Pb	Cu	Zn
MESS-1					
CERTIFIED:	0.171 +/- 0.014	0.59 +/- 0.10	34.0 +/- 6.1	25.1 +/- 3.8	191 +/- 17
FOUND:	.178	.58	29	25.8	180.0
	.199	.63	26	27.1	179.0
	.191	.60	29	26.8	179.0
	.260	.70	27	25.5	179.0
	.203	.66	23	25.0	179.0
MEAN	.206	.63	27	26.0	179.2
STD DEV	.032	.05	2	.9	.4
BCSS-1					
CERTIFIED:	0.129 +/- .012	0.25 +/- .04	22.7 +/- 3.4	18.5 +/- 2.7	119 +/- 12
FOUND:	.150	.26	18	17.2	107.0
	.150	.24	18	17.8	107.0
	.150	.20	18	17.4	107.0
	.150	.23	19	17.5	109.0
	.160	.27	17	17.7	106.0
MEAN	.152	.24	18	17.5	107.2
STD DEV	.004	.03	1	.2	1.1

(cf:AC890131)

ACCURACY DATA

LAB #890133

	Hg	Cd	Pb	Cd	Zn
MESS-1					
CERTIFIED:	0.171 +/- 0.014	0.59 +/- 0.10	34.0 +/- 6.1	25.1 +/- 3.8	191 +/- 17
FOUND:	.206	.67	37	23.3	179.0
	.175	.67	35	21.9	181.0
	.172	.72	35	22.7	193.0
	.181	.69	37	23.9	186.0
	.175	.68	36	22.9	184.0
MEAN	.182	.69	36	22.9	184.6
STD DEV	.014	.02	1	.7	5.4
EOSS-1					
CERTIFIED:	0.129 +/- .012	0.25 +/- .04	22.7 +/- 3.4	18.5 +/- 2.7	119 +/- 12
FOUND:	.140	.28	35	16.0	107.0
	.130	.28	28	15.0	112.0
	.140	.27	28	15.0	110.0
	.130	.25	33	16.0	112.0
	.140	.27	30	16.0	114.0
MEAN	.136	.27	31	15.6	111.0
STD DEV	.005	.01	3	.5	2.6

(cf:AC890133)

ACCURACY DATA

LAB #870830

	Hg	Cd	Pb	Cu	Zn
MESS-1					
CERTIFIED:	0.171 +/- 0.014	0.59 +/- 0.10	34.0 +/- 6.1	25.1 +/- 3.8	191 +/- 17
FOUND:	.209	.62	24	22.3	177.0
	.094	.63	19	24.2	176.0
	.210	.65	21	23.9	176.0
	.247	.63	21	22.8	176.0
	.660	.66	27	26.4	184.0
MEAN	.284	.64	22	23.9	177.8
STD DEV	.218	.02	3	1.6	3.5
BCSS-1					
CERTIFIED:	0.129 +/- .012	0.25 +/- .04	22.7 +/- 3.4	18.5 +/- 2.7	119 +/- 12
FOUND:	.140	.27	20	16.7	98.8
	.140	.24	10	16.0	110.0
	.150	.22	10	15.0	107.0
	.234	.22	10	15.0	106.0
	.160	.21	20	16.0	109.0
MEAN	.165	.23	14	15.7	106.2
STD DEV	.040	.02	5	.7	4.4

(cf:AC870830)

ACCURACY DATA LAB #5592G

	CERTIFIED	OBTAINED WITH PRECISION DATA (NOTE 1)	OBTAINED WITH ACCURACY DATA (NOTE 2)
MESS-1			
Cadmium	0.59 +/- 0.10	0.60 +/- 0.07	0.60 +/- 0.07
Lead	34.0 +/- 6.1	30.3 +/- 1.9	30.3 +/- 5.1
Mercury	0.171 +/- 0.0141	0.19 +/- 0.03	0.19 +/- 0.03
BCSS-1			
Cadmium	0.25 +/- 0.04	0.25 +/- 0.04	0.25 +/- 0.04
Lead	22.7 +/- 3.4	20.5 +/- 1.8	20.5 +/- 1.8
Mercury	0.129 +/- 0.012	0.14 +/- 0.02	0.14 +/- 0.02

NOTE 1
Precision data was obtained by calculating a standard deviation based on the mean values of a minimum of 50 replicate analyses since March 1983.

NOTE 2
Accuracy data was obtained by calculating a standard deviation from the accepted or certified values on a minimum of 50 replicate analyses since March 1983.

(cf:AC5592G)